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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/765,608	01/22/2001	Yoshinori Hayashi	202114US2	9741

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ALEXANDRIA, VA 22314

EXAMINER

PHAM, HAI CHI

ART UNIT PAPER NUMBER

2861

DATE MAILED: 01/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/765,608

Applicant(s)

HAYASHI ET AL.

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11/18/03.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive with respect to the prior art in Itoh et al. (U.S. 5,412,408), and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frazier et al. (U.S. 5,193,008) in view of Itoh et al. (U.S. 5,412,408).

Frazier et al. discloses an interleaving vertical pixel formation in a laser printer such that a dot is formed at a center between adjacent light fluxes as a result of the adjacent light fluxes being overlapped with one another in a sub-scan direction (the image dots between the scan lines being achieved by energizing two pixels directly above and directly below the desired interleaved dot with the energizations at both pixels being below the threshold level for producing a dot while the combined energization at the desired interleaved dot is higher than the threshold such that the desired interleaved dot is printed) (col. 3, line 43 to col. 4, line 41).

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With regard to claims 1 and 7, Frazier et al. further teaches the overlapped portion forming the center dot having an energy level exceeding the threshold necessary to produce the dot, such threshold being represented by the range of 134 nsecs and 201 nsecs, which, by the pulsedwidth modulation standard, is equivalent to the range of 50% and 75% of laser energization, respectively, where an energization for 134 nsecs does not produce a dot and an energization of 201 nsecs producing a dot (col. 3, line 64 to col. 4, line 6) (Fig. 5).

Frazier et al. further teaches such laser printer including a photoconductive drum (not shown) along with a laser source (not shown) for emitting the light flux to scan the surface of the photoconductive drum to form the latent image, but Frazier et al. does not show the deflector, which is an inherent component of a raster-based laser printer taught by Frazier et al.

It is noted that in order to carry out the above scheme taught by Frazier et al., it is necessary that the beam spot diameter W_s be greater than the interval L between two adjacent scan lines. In fact, such relationship is explicitly shown in Fig. 6 of Frazier et al., where the beam spot diameter W_s (the beam spot being shown in broken line in Fig. 6) is twice greater than the interval L between two adjacent scan lines (70 and 71), or

$$W_s / L = 2$$

a ratio value well within the claimed ratio range (referring to claims 1, 3, 5, 7).

On the other hand, Frazier et al. further suggests that the laser beam spot can be oval in area (col. 1, lines 49-50) meaning that the beam spot diameter W_m in the main

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scanning direction is smaller than the beam spot diameter W_s in the sub-scanning direction, or

$$W_m / W_s < 1 \quad (\text{referring to claims 2, 4, 6, 8}).$$

Although Frazier et al. does not explicitly disclose the laser beam spot on the surface of the photosensitive body being defined by $1/e^2$ of the maximum value in the exposure distribution of the beam spot, it is however well old and known in the printing art that such beam spot is normally defined at a value at which the light intensity is $1/e^2$ of the central light intensity in any conventional laser printer as evidenced by Itoh et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to consider the value of the laser beam spot diameter in the device of Frazier et al. as taken at or defined by $1/e^2$ of the maximum value in the exposure distribution of the beam spot, since it is standard measurement of the laser beam spot on the surface to be scanned.

Response to Arguments

4. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new grounds of rejection as presented in this Office action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read "Hai Pham".

HAI PHAM
PRIMARY EXAMINER

January 2, 2004